

PLOT SCALE - 8000.0000001.000000

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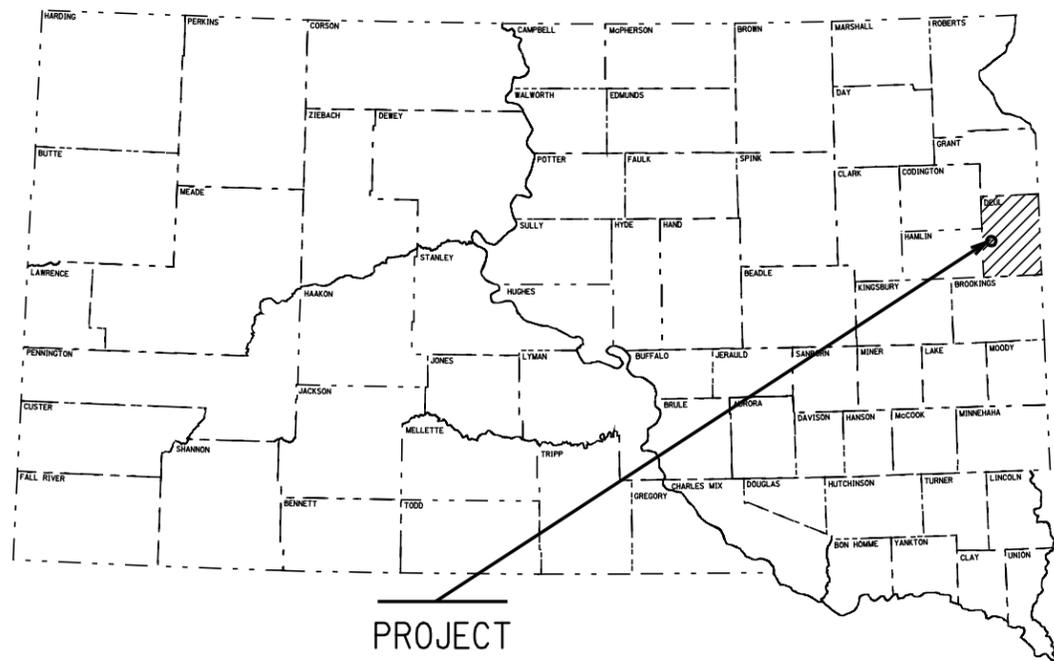
STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED

**PROJECT 029 S-171 & 029 N-171**  
**INTERSTATE 29**  
**DEUEL COUNTY**

WASTEWATER LAGOON REPAIR  
PCN i25a & i25b

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	029 S-171 & 029 N-171	1	12

Plotting Date: 18-MAY-2011

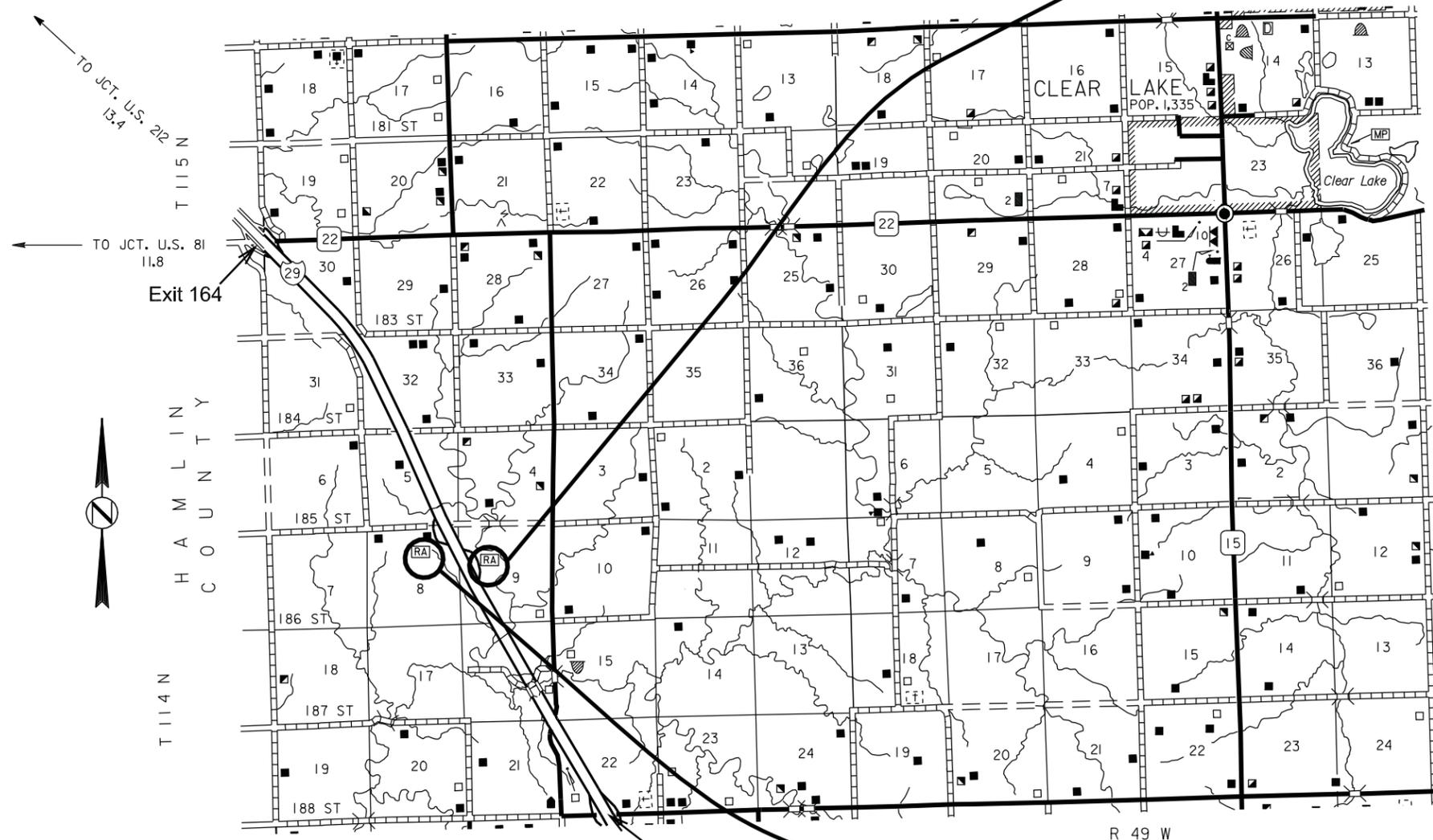


INDEX OF SHEETS

- Sheet No. 1 Title Sheet and Layout Map
- Sheet No. 2-4 Estimate of Quantities and Plan Notes
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- Sheet No. 6 Original Construction Plans NB Rest Area
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- Sheet No. 8 Proposed Lagoon Detail NB Rest Area
- Sheet No. 9 Lagoon Depth Indicator
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**Project 029 N-171**  
PCN i25b

I 29 NBL - MRM 160.4



**Project 029 S-171**  
PCN i25a

I 29 SBL - MRM 161.2

STORM WATER PERMIT  
(None Required)

PLOT NAME - I25B\_COVER\_SHEET  
FILE - U:\REGIONAL\PRJ\DEUL\I25B\I25B\_COVER\_SHEET.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	029 S-171 & 029 N-171	2	12

## ESTIMATE OF QUANTITIES

### 029 S-171 PCN i25a - South Bound Hidewood Rest Area

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
250E0010	Incidental Work	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS
831E0110	Type B Drainage Fabric	5	SqYd
900E5500	Drainage System	Lump Sum	LS

### 029 N-171 PCN i25b - North Bound Hidewood Rest Area

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
120E0020	Unclassified Excavation	Lump Sum	LS
120E0600	Contractor Furnished Borrow	20	CuYd
230E0020	Placing Contractor Furnished Topsoil	30	CuYd
250E0010	Incidental Work	Lump Sum	LS
700E0110	Class A Riprap	610	Ton
734E0010	Erosion Control	Lump Sum	LS
831E0110	Type B Drainage Fabric	952	SqYd
900E2030	Miscellaneous Work	1	Site
900E4000	Lagoon Depth Indicator	1	Each
900E5500	Drainage System	Lump Sum	LS

## SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

## SCOPE OF WORK

The location of these projects is the South Bound and North Bound Hidewood Interstate Rest Area located 3 miles Northwest of Exit 157 on I-29. The Hidewood Interstate Rest Areas each have a two cell wastewater lagoon system. The larger North cell is the secondary cell and the smaller South cell is the primary cell.

Work at the South Bound Hidewood Interstate Rest Area shall consist of installing a 8" PVC pipe between the primary and secondary cells.

Work at the North Bound Hidewood Interstate Rest Area shall consist of restoring the primary cell inslopes with clay and protecting the primary cell inslopes with riprap along with installing a 8" PVC pipe between the primary and secondary cells. A portion of the floor of the secondary cell shall be excavated and lowered.

The wastewater system is presently constructed so that raw wastewater may be sent to the primary or secondary cell. During the repair of the North Bound Rest Area primary cell, raw wastewater will be sent to the secondary cell. SDDOT forces will be responsible for changing the raw wastewater point of discharge from the primary to the secondary cell. The Contractor shall notify the Engineer a minimum of 10 calendar days in advance of when he desires to have the wastewater discharge location changed from the primary to the secondary cell. SDDOT forces will switch the wastewater discharge location to the secondary cell.

## SEQUENCE OF OPERATIONS

The following sequence of operations shall be utilized unless an alternate sequence of operations is submitted to and approved by the Engineer.

South Bound Rest Area:

1. Remove Chain Link Fence as required
2. Remove vegetation from work areas
3. Install 8" PVC pipe between Primary and Secondary Cells
4. Compact trench and replace topsoil
5. Install Drainage Fabric
6. Replace riprap in Primary Cell
7. Erosion Control
8. Reset Chain Link Fence

North Bound Rest Area:

1. Remove Chain Link Fence as required
2. Excavate portion of Secondary Cell
3. Install bentonite seal and 3" soil layer in Secondary Cell
4. Clean out Primary Cell
5. Remove vegetation from work areas and mow banks.
6. Repair banks of berm of the Primary Cell
7. Install 8" PVC pipe between Primary and Secondary Cells
8. Install Drainage Fabric
9. Install Lagoon Depth Indicator
10. Install Riprap
11. Pre-fill Primary Cell Lagoon
12. Place Topsoil
13. Erosion Control
14. Reset Chain Link Fence

## LAGOON FENCING

The Contractor shall visit the site to determine the extent of fence removal required to complete the project.

Chain Link Fence Standard Plates are included in these plans to show the construction requirements for reconstruction of the fence upon project completion.

All costs associated with removing the existing fence and resetting the fence to the pre-disturbed location shall be incidental to the contract lump sum price for **INCIDENTAL WORK**.

## CLEAN OUT PRIMARY CELL (NB Rest Area Only)

The Contractor shall pump any remaining effluent from the existing primary cell into the secondary cell. All costs associated with cleaning out the primary cell shall be incidental to the contract unit price per site for **MISCELLANEOUS WORK**.

No sludge may be removed from the lagoon site without prior approval from the DENR (South Dakota Department of Environment and Natural Resources). Should sludge removal be required the Contractor and Engineer shall contact Tina Piroutek (605-773-3351) at DENR for specific requirements.

## LAGOON BERM RESTORATION (NB Rest Area Only)

Erosion of the banks of the berms in the primary/south cell will need to be repaired. The Contractor shall restore the berms of the primary cell with clay fill material back to the original design inslope of 3:1. The Contractor shall supply clay fill material to be used to repair any erosion of the berms before the installation of Drainage Fabric and Riprap. Included in the Estimate of Quantities is 20 cubic yards Contractors Furnished Borrow for the repair of erosion holes in the berms. On past projects of similar nature it has been possible to use existing material that has sluffed to the bottom of the cell. The Contractor will be allowed to use the material at the bottom of the cell to restore the berm slopes, with the Engineers approval. There will be no direct payment if the berm slopes are restored using material from within the cell bottom.

All costs to furnish and install the fill material shall be incidental to the contract unit price per cubic yard for **CONTRACTOR FURNISHED BORROW**.

The clay fill material shall be constructed of relatively impervious and stable material at 0-3% over optimum moisture content. Optimum Moisture will be determined in accordance with SD 104 (AASHTO T99). The compaction and moisture conditions shall be sufficient to limit the seepage through the berm to 1/16 inch per day. Clay shall be placed and compacted in lifts such that the depth of any lift shall not exceed 8 inches.

All vegetation and roots shall be removed from the area upon which the clay fill material is to be placed. The clay fill material must not contain any organic material, debris, frozen material, large clods or stones larger than 6 inches in diameter.

Water required for compaction shall be incidental to the various contract items.

Clay fill material placement of 12" in depth or greater shall be compacted by the Ordinary Compaction Method in accordance with Section 120 of the Standard Specifications. Clay fill material less than 12" in depth shall be compacted to the satisfaction of the Engineer.

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	029 S-171 & 029 N-171	3	12

**CONTRACTOR FURNISHED CLAY AND TOPSOIL (NB Rest Area Only)**

The Contractor shall provide suitable site(s) for Contractor furnished clay and topsoil material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site(s).

The material for the clay fill shall be of the CL class. (CL class as defined by the Unified Soil Classification System ASTM D-2487.) (CL class soil is defined as material with more than 50% of the material passing the No. 200 Sieve, having a Liquid Limit of less than 50 and a Plasticity Index of great than 7.)

The Contractor shall provide a soil sample a minimum of 2 weeks prior to use to allow time for the soil to be classified. The soil sample shall be witnessed by the Engineer.

Clay fill material quantities are computed using the volume of embankment plus 40% for shrinkage.

Restoration of the Contractor furnished borrow site(s) shall be the responsibility of the Contractor.

Haul of clay and topsoil material on established traveled roadways shall be limited to trucks hauling legal loads and which do not sustain damage to the roadway, parking lots, or other areas of the Hidewood Interstate Rest Area, as approved by the Engineer. Hauling of material in the roadway ditches will not be allowed.

**EXCAVATION OF SECONDARY CELL (NB Rest Area Only)**

An area of approximately 35' x 52' shall be excavated as shown on the Proposed North Bound Rest Area Lagoon. The excavated material shall become the property of the Contractor for his disposal. A portion of the excavated material may be used for the soil layer above the bentonite seal.

The depth of excavation shall match that of the lower shelf of the secondary cell (Elev 1822.5) plus additional excavation to allow for placement of a Bentonite Seal Layer and 3" of Soil Blanket.

Upon necessary excavation, the pond bottom shall be scarified to a depth of 12 inches and cleared of vegetation and debris. Organic material thus removed shall not be reused. However, suitable topsoil relatively free of debris may be used as cover material on the outer slopes of the embankment. A minimum of six (6) inches of the scarified soil shall be removed, the remaining scarified soil shall be brought to the proper moisture content and compacted to the specified density, and then the removed soil shall be uniformly spread and compacted, at the proper moisture content, as specified.

Water required for compaction shall be incidental to the various contract items.

Compaction shall be by the Ordinary Compaction Method in accordance with Section 120 of the Standard Specifications.

Upon scarification and compaction of the pond bottom, Bentonite clay shall be placed for a seal. Bentonite clay for sealing shall be granulated, chemically pure bentonite clay manufactured for use with local soil for pond sealing. The material shall be granular having an approximately 90% by weight passing the No. 20 sieve and retained on the No. 70 sieve with less than 1% passing the No. 100 sieve, and a weight of approximately 67 pounds per cubic foot when dry.

Bentonite shall be uniformly spread over the area to be sealed using an approved spreader. Rate of application of the bentonite shall be 2.0 pounds per square foot. Bentonite shall be placed in an even unbroken layer which will be left intact when overlying 3" soil blanket is laid. There shall be no mixing of bentonite with the underlying soil.

Care shall be taken to provide a continuous bentonite seal layer. Following spreading of bentonite layer a 3 inch layer of soil material shall be spread over the bentonite layer taking special care not to disturb in place any portion of the underlying bentonite layer. The entire area shall be compacted with a rubber tired roller or other approved equipment to the satisfaction of the Engineer.

The final surface of the bottom shall be flat. Finish elevation shall not vary by more than 3 inches from the average elevation of the bottom.

All costs associated with excavation, disposal of excavated material, scarifying, compaction, Bentonite and soil blanket shall be incidental to the contract lump sum price for **UNCLASSIFIED EXCAVATION**.

**INTERCONNECT PIPE BETWEEN CELLS**

The Contractor shall install a 8" PVC pipe between the primary and secondary cells. The elevation of the outlet shall be 0.5 ft above the floor elevation of the secondary cell. The inlet elevation shall be 1.5 ft above the outlet elevation.

A 2.5' diameter by 1.5' thick ring of Class M6 concrete shall be placed around the inlet end of the 8" PVC interconnect pipe. Two #4 rebar coiled in a 1'-10" diameter ring shall be placed within the 2.5' diameter ring of concrete. The surface of the concrete shall be flush with the end of the 8" PVC. The 8" PVC pipe and the surface of the concrete shall be flush with the face of the riprap on the inslope of the primary cell.

On the Southbound Rest Area Lagoon the riprap and drainage fabric shall be removed to allow installation of the 8" PVC interconnect pipe. Upon placement and compaction of the trench, a minimum of a 3' width of Type B Drainage Fabric shall be placed on the inslope from the pipe inlet to the top of the berm and tucked as shown on the detail drawings. Upon placement of drainage fabric, the removed riprap shall be replaced and the work area restored. Removal of riprap shall not cause damage to the underlying fabric.

The trench to install the 8" PVC pipe shall be backfilled and compacted per the Lagoon Berm Restoration notes found within these plans.

The 8" PVC pipe shall be Schedule 40 solid wall pipe with PVC DWV fittings designed for use in sanitary sewer applications. Pipe and fittings shall be manufactured from virgin rigid PVC (polyvinyl chloride) vinyl compounds with a Cell Class of 12454 as identified in ASTM D 1784.

PVC Schedule 40 pipe shall be Iron Pipe Size (IPS) conforming to ASTM D 1785 and ASTM D 2665. PVC DWV fittings shall conform to ASTM D 2665. Pipe and fittings shall be manufactured as a system and be the product of one manufacturer. All pipe and fittings shall be manufactured in the United States. Pipe and fittings shall conform to National Sanitation Foundation Standard 14.

Installation shall comply with the latest installation instructions published by Charlotte Pipe and Foundry (<http://www.charlottepipe.com>) and shall conform to all local plumbing, building, and fire code requirements. Buried pipe shall be installed in accordance with ASTM D 2321 and ASTM F 1668. Solvent cement joints shall be made in a two step process with primer manufactured for thermoplastic piping systems and solvent cement conforming to ASTM D 2564. The system shall be protected from chemical agents, fire stopping materials, thread sealant, plasticized vinyl products, or other aggressive chemical agents not compatible with PVC compounds.

All costs to furnish and install the 8" PVC pipe, Class M6 concrete, reinforcing steel, wire mesh, rodent guard, compacting trench and other incidentals to successfully install the interconnect pipe at both the North Bound and South Bounds Rest Areas shall be incidental to the contract lump sum price for **DRAINAGE SYSTEM**.

**DRAINAGE FABRIC**

The Contractor will be responsible to mow the banks of the cells and clear the weed debris from the berms to the satisfaction of the Engineer prior to placement of Drainage Fabric. Drainage Fabric shall be placed 2 feet above the toe to top of the freeboard and anchored by digging a 12 inch deep slot into top of berm. 12 inches of the Drainage Fabric shall be tucked in the slot and tamped shut.

Drainage Fabric shall be Type B. The fabric material shall be resistant to sunlight and organic materials typical of wastewater.

Drainage fabric shall be installed such that the in place concrete splash pad (effluent entry point into lagoon) remain unobstructed upon completion of installation.

Payment for furnishing and installing drainage fabric and clearing of all weed debris shall be incidental to the contract unit price per square yard for **TYPE B DRAINAGE FABRIC**.

Included in the Estimate of quantities for the South Bound Rest Area is 5 square yards of Type B Drainage Fabric for placement on the Primary Cell inslope above the interconnect pipe.

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### RIPRAP

The riprap shall be provided on the interior slopes of the North Bound Rest Area Primary Cell to the top of the freeboard. Riprap shall be hard and durable and be stable after placement. Thickness of riprap placement shall be 15".

The riprap shall meet the requirements of Section 830 of the Standard Specifications for Class A Riprap, except that no more than 15% of the rock shall be smaller than 6" in size.

Riprap installation shall be installed such that the in place concrete splash pad is not damaged and remain unobstructed upon completion of installation.

### WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the DOT Environmental Office.

The Contractor shall not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the DOT Environmental Office.

The DOT Environmental Office contact is the Environmental Project Scientist, 605-773-3268. The WATER SOURCE plan note does not relieve the Contractor of his/her responsibility to obtain the necessary permits from other agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE).

### PRE-FILLING THE LAGOON (NB Rest Area Only)

After placement of drainage fabric and riprap is completed, the Contractor shall be required to fill the lagoon to a minimum depth of 3'. This shall be completed before vegetation can begin to grow.

The Contractor shall be responsible for furnishing and transporting the water required to fill the lagoon.

All costs associated with pre-filling the lagoon shall be incidental to the contract unit price per site for [MISCELLANEOUS WORK](#).

### PLACING CONTRACTOR FURNISHED TOPSOIL (NB Rest Area Only)

Upon completion of the erosion repair, installation of drainage fabric and rip rap, topsoil shall be placed above the riprap at the top of the berm. Included in the Estimate of Quantities is 30 Cubic Yards of Placing Contractor Furnished Topsoil to repair the top of the berm.

### SOIL STERILIZATION

SDDOT forces will be responsible for soil sterilization of the banks and excavated portion of the secondary cell upon completion of the project.

### EROSION CONTROL

North Bound Rest Area - On completion of construction and placement of topsoil, all disturbed areas above the riprap shall be seeded and fertilized.

South Bound Rest Area - On completion of construction and placement of topsoil, all disturbed areas resulting from installation of the interconnect pipe and excavation of the secondary cell shall be seeded and fertilized. Only the inslopes of the secondary cell shall be seeded and fertilized.

Seed shall be Intermediate Wheatgrass (Oahe) at the rate of 1/2 pound Pure Live Seed (PLS) per 1000 square feet and fertilizer shall be a commercial fertilizer having a minimum guaranteed analysis of 18-46-0, 11-52-0, or an approved equal at the rate of 2 pounds per 1000 square feet. Hand seeding and fertilizing devices will be allowed, as approved by the Engineer. All newly seeded and fertilized areas shall be raked to the satisfaction of the Engineer. Seeding and fertilizing will not be measured for payment but shall be incidental to the contract lump sum price for [EROSION CONTROL](#).

### HISTORICAL PRESERVATION OFFICE CLEARANCES

To obtain State Historical Preservation Office (SHPO) clearance, a cultural resources survey may need to be conducted by a qualified archaeologist. In lieu of a cultural resources survey, the Contractor could request a records search from Jim Donohue, State Archaeological Research Center (SARC). Provide SARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that no artifacts have been found on the site. The Contractor shall arrange and pay for the cultural resource survey and/or records search.

If any earth disturbing activities occur within the current geographical or historic boundaries of any South Dakota reservation, the Contractor shall obtain Tribal Historical Preservation Office (THPO) clearance. If no THPO exists, the required SHPO clearance shall suffice, with documentation of Tribal contact efforts provided to SHPO.

To facilitate SHPO or THPO responses, the Contractor should submit a records search or cultural resources survey report to the DOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3268). Allow 30 days from the date this information is submitted to the Environmental Engineer for SHPO/THPO approval. The Contractor is responsible for obtaining all required permits and clearances for staging areas, borrow sites, waste disposal sites, and all material processing sites. The Contractor shall provide the required permits and clearances to the Engineer at the preconstruction meeting.

### WASTE DISPOSAL SITE

The Contractor will be required to furnish a site(s) for the disposal of construction/demolition debris generated by this project.

Construction/demolition debris may not be disposed of within the State ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Highway, Road, and Railway Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

1. Construction/demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction/demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

### PROJECT COMPLETION REQUIREMENTS

Upon completion of the project, the Engineer shall notify Jerry Maier (605-626-7888) informing him of project completion. Jerry Maier shall be responsible for notifying DENR that the project is complete and the lagoons are in service.

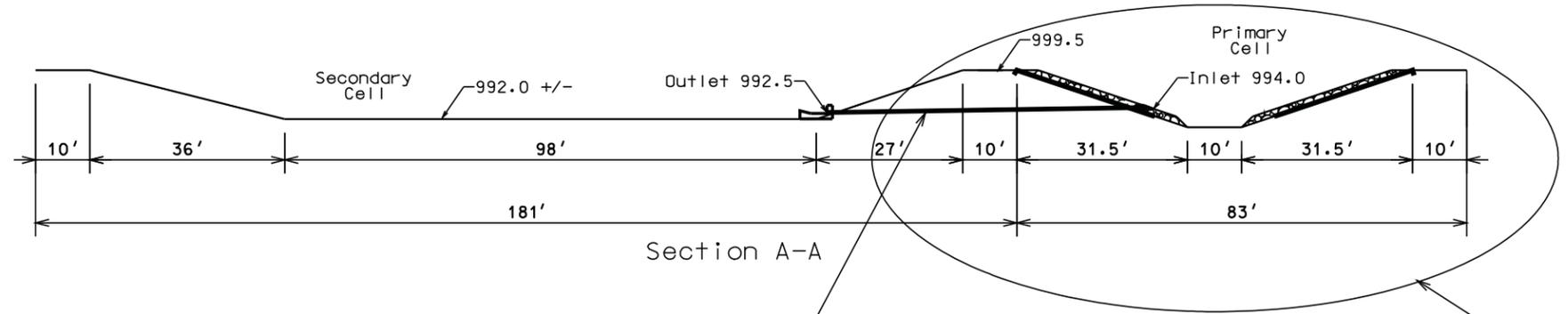
# UPGRADE DETAILS FOR SOUTH BOUND REST AREA LAGOON

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	029 S-171 & 029 N-171	5	12
Plotting Date: 17-MAY-2011			

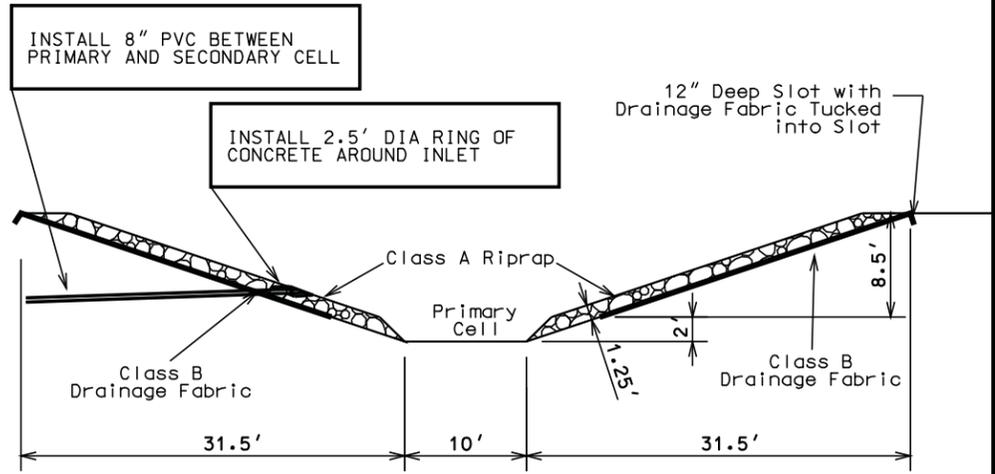
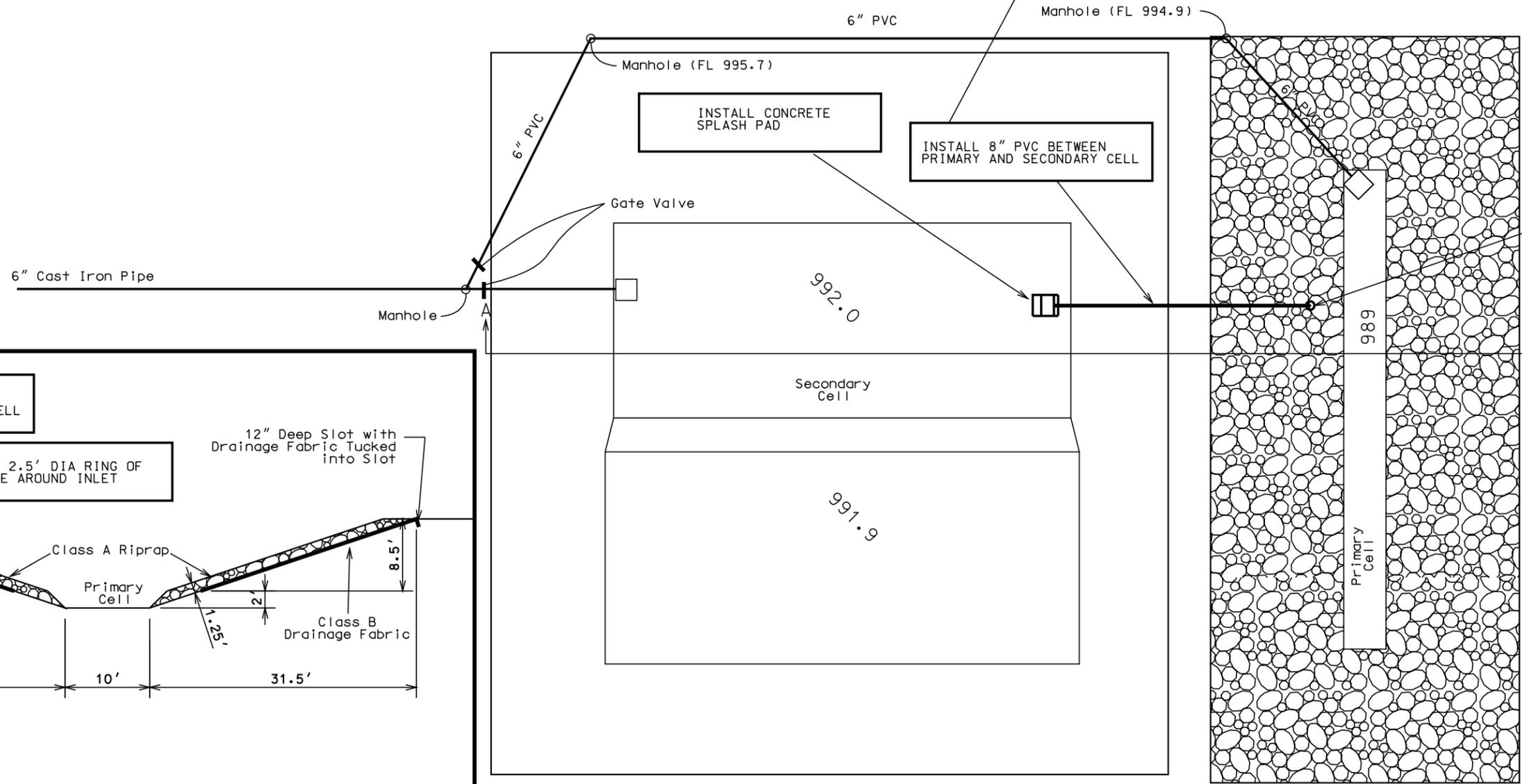
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PLOT NAME - SB\_LAGOON\_DETAILS

Bench Mark #1:  
Elevation 1000.00  
Rebar 18Ft North Middle of Gate.



See Detail A



Detail "A"

Note: Chain Link Fence is located on top of berm.

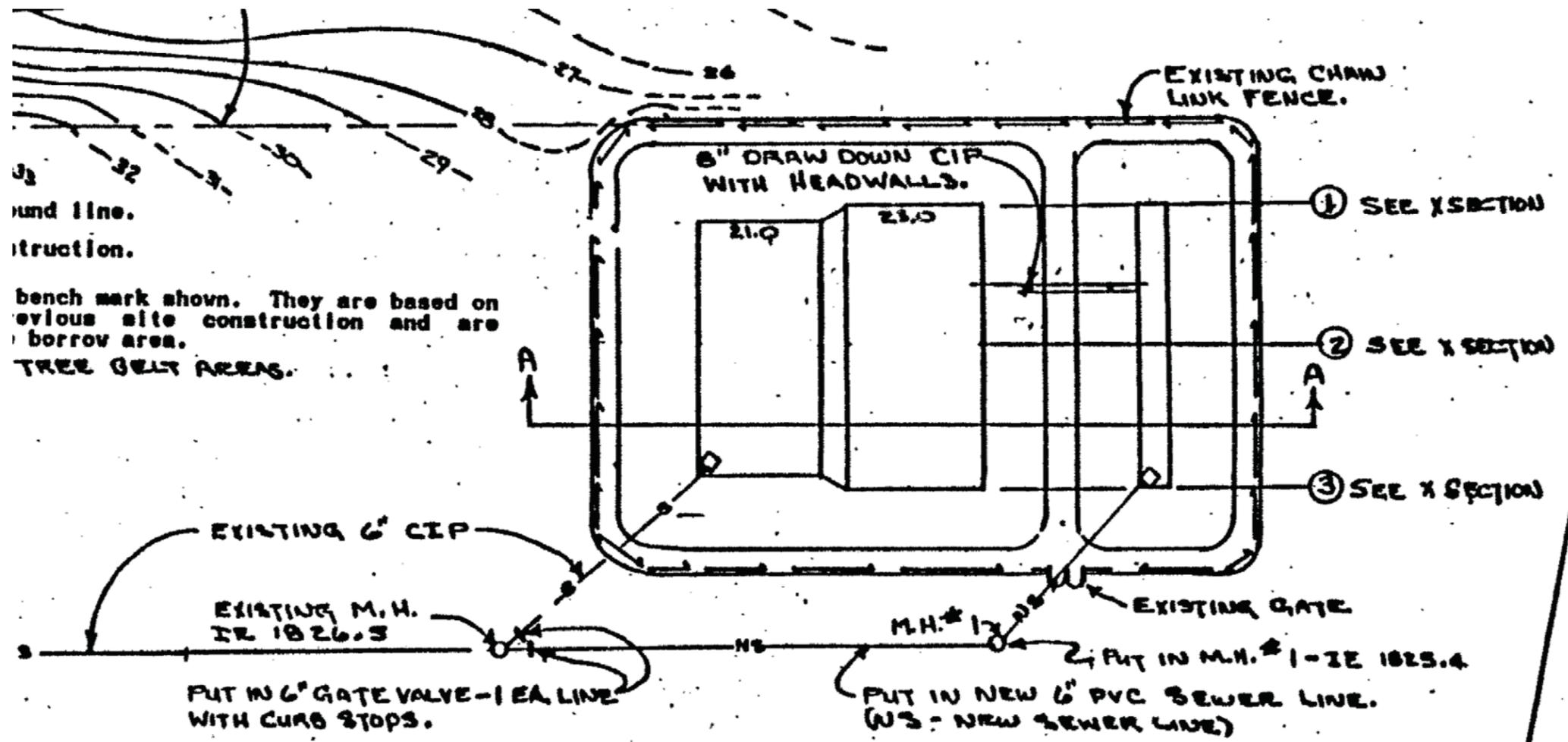
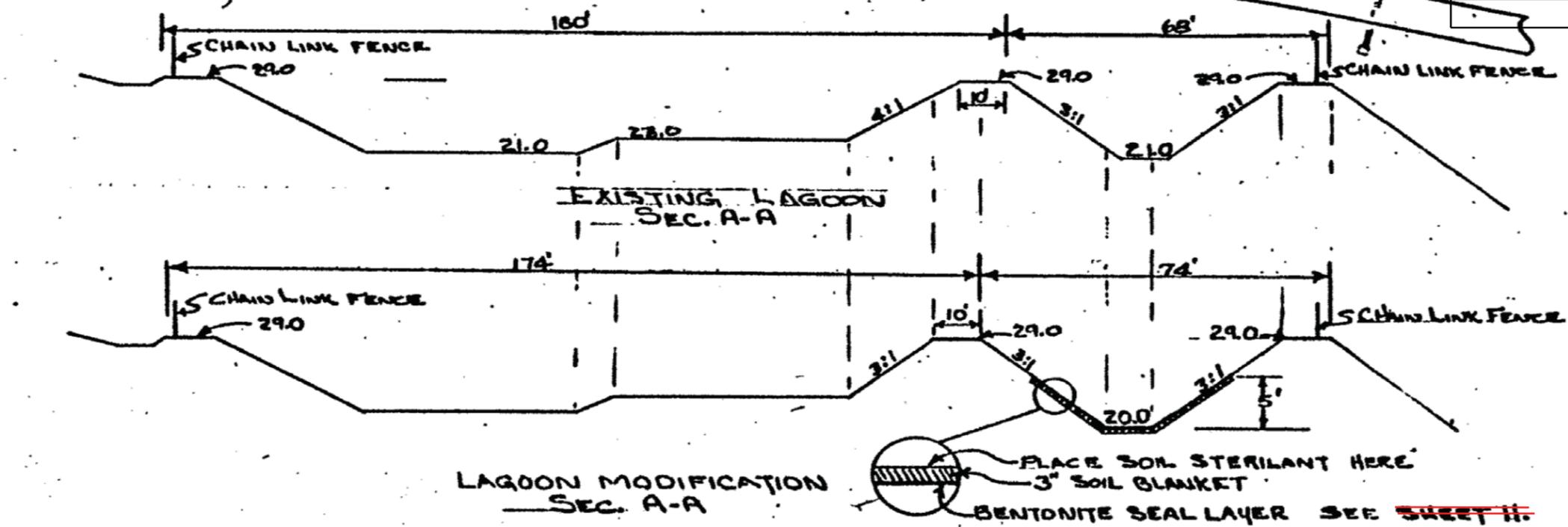


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ORIGINAL NORTH BOUND LAGOON CONSTRUCTION DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	029 S-171 & 029 N-171	6	12



und line.  
struction.

bench mark shown. They are based on  
vious site construction and are  
borrow area.  
TREE BELT AREAS.

EXISTING 6" CIP  
EXISTING M.H.  
IR 1826.5  
PUT IN 6" GATE VALVE - 1 EA. LINE  
WITH CURB STOPS.

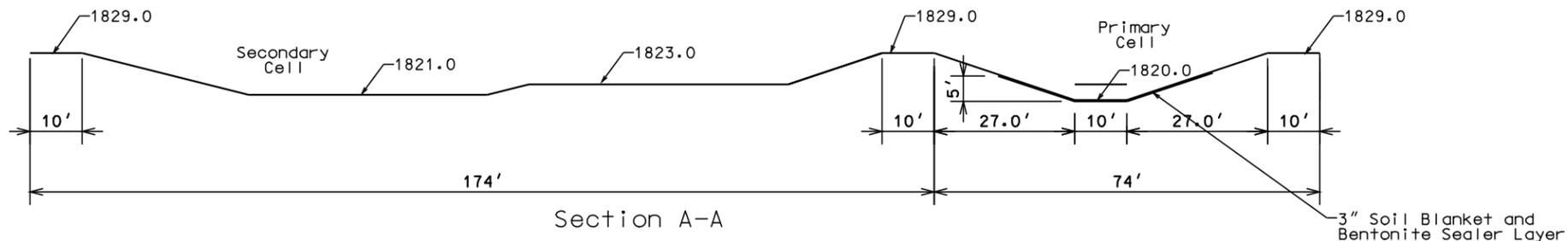
M.H. # 12  
PUT IN NEW 6" PVC SEWER LINE.  
(NS - NEW SEWER LINE)

PLOT SCALE - 30.000000:1.000000

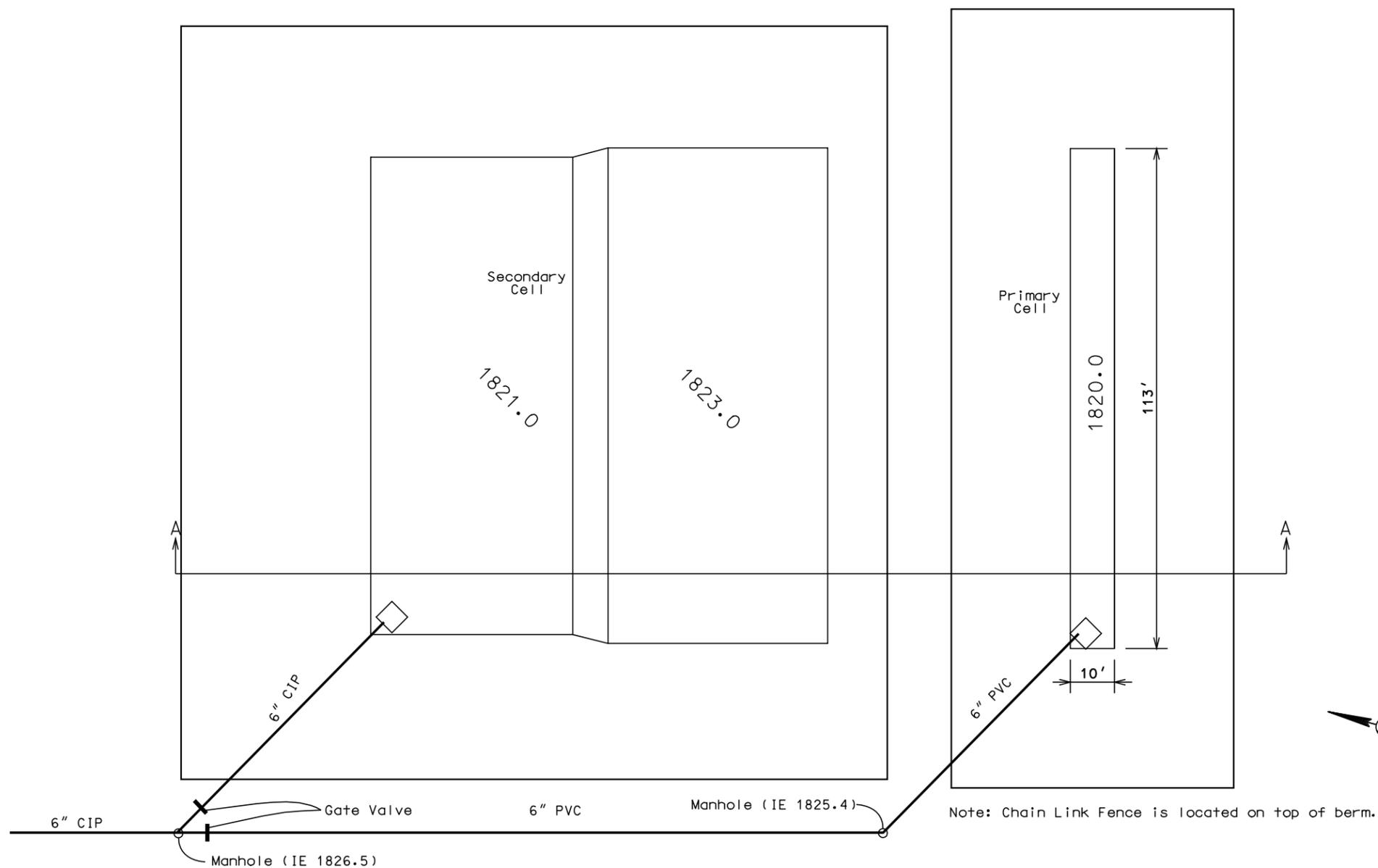
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# EXISTING NORTH BOUND REST AREA LAGOON

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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Elevation shown on sheet are per original construction plans.



PLOT NAME - NB\_LAGOON\_DETAIL3

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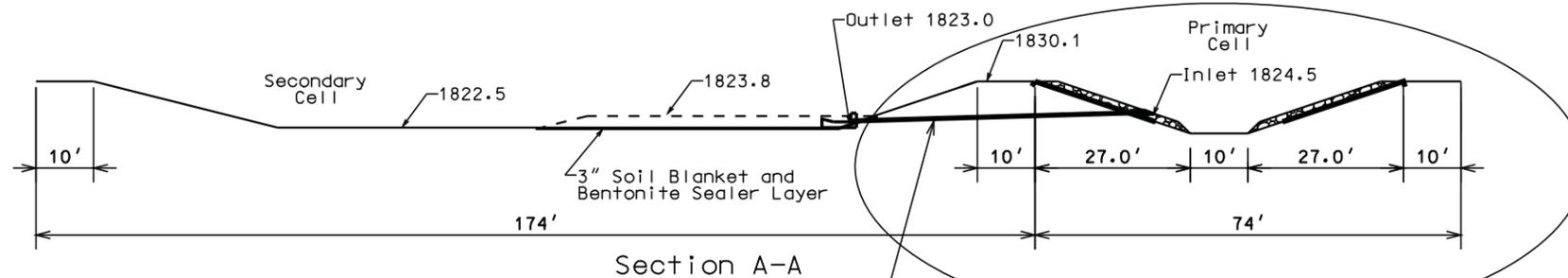
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# PROPOSED NORTH BOUND REST AREA LAGOON

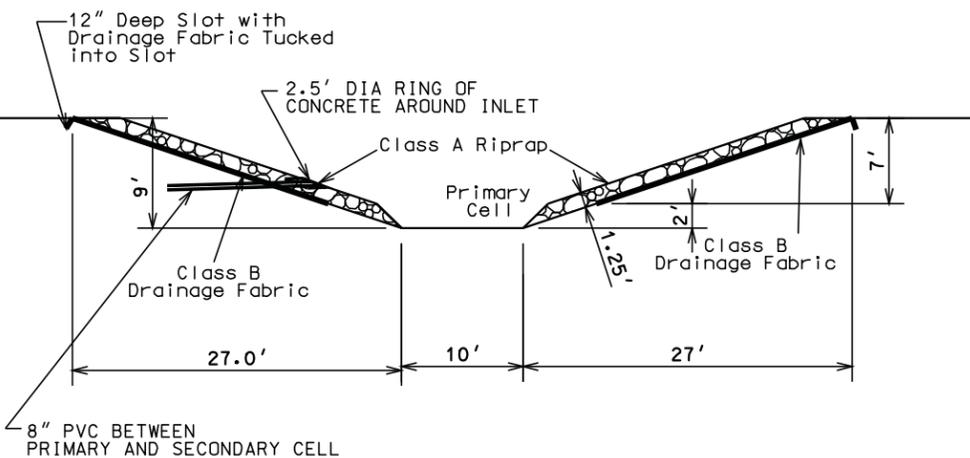
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	029 S-171 & 029 N-171	8	12

Plotting Date: 17-MAY-2011

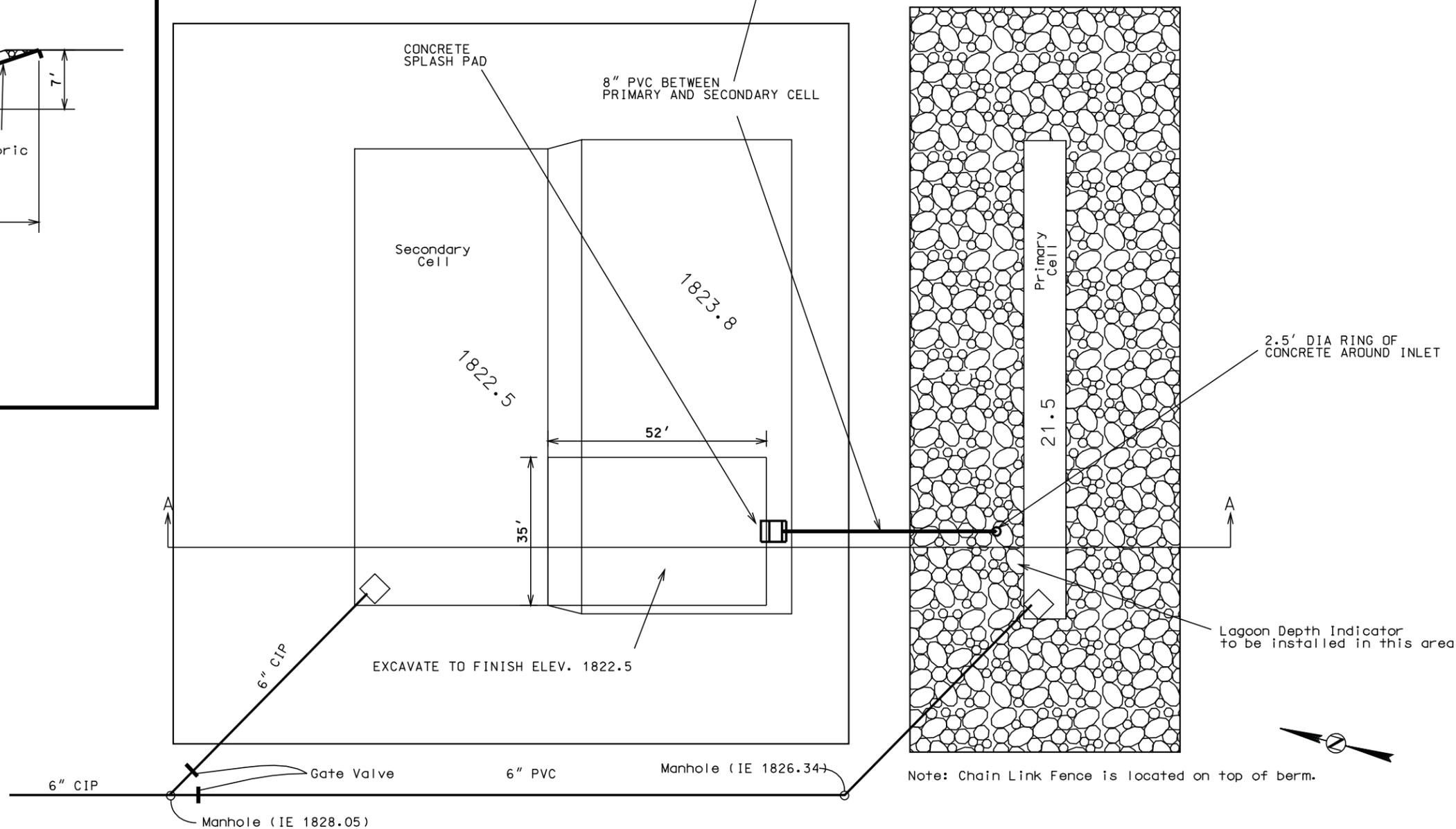
Bench Mark I-29 MRM 160.38:  
Elevation 1825.62.



See Detail A



### Detail "A"



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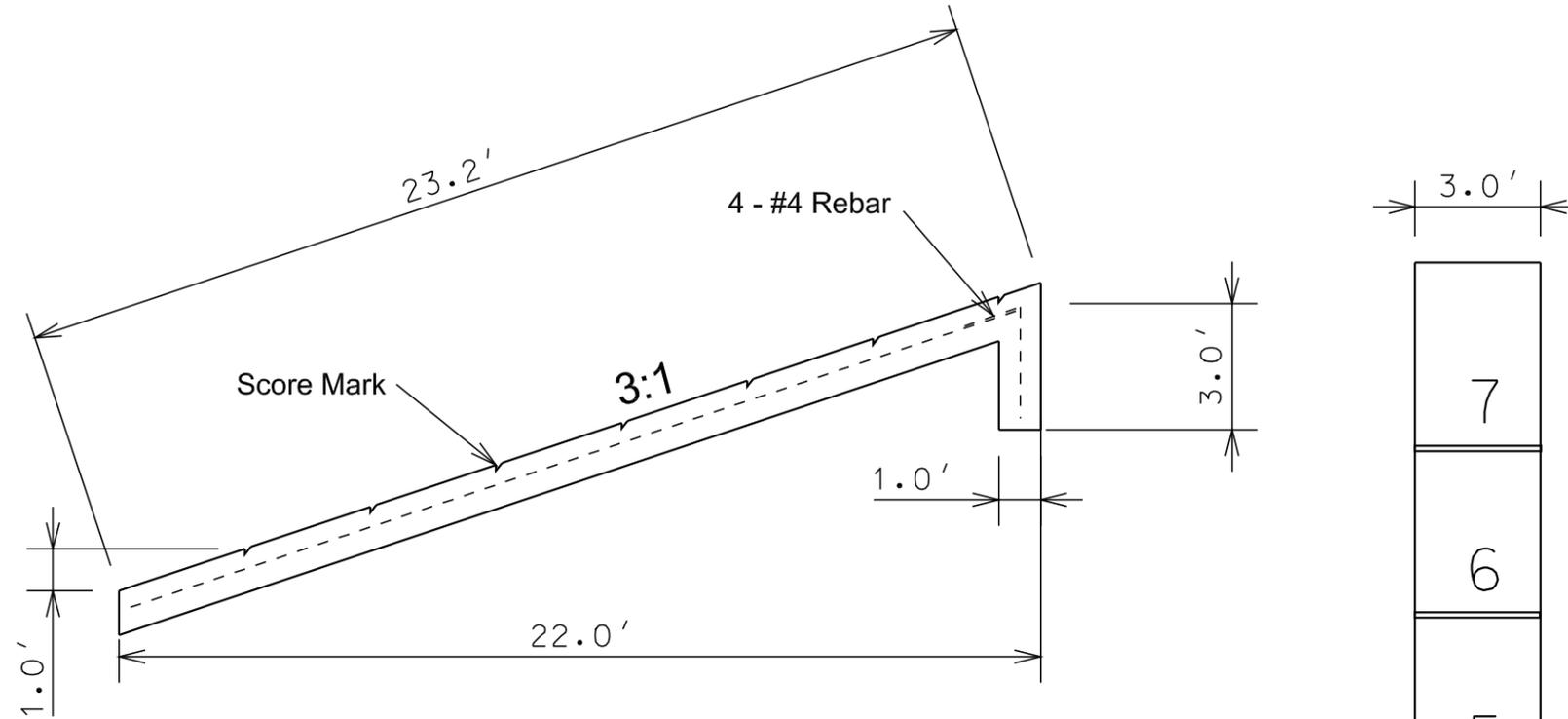
PLOT NAME - NB.LAGOON.DETAIL2

PLOT SCALE - 4,2500001.1.000000

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# DEPTH INDICATOR

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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Plotting Date: 17-MAY-2011			



## NOTES:

In place Depth Indicator shall be removed and become the property of the Contractor for his disposal.

Depth Indicator to be a 36" x 12" concrete slab up the interior slope of the lagoon.

Drainage Fabric shall be placed under Depth Indicator.

Place 4 - #4 Rebar in slab. Maintain a minimum cover of 3" on rebar. Rebar to be equally spaced.

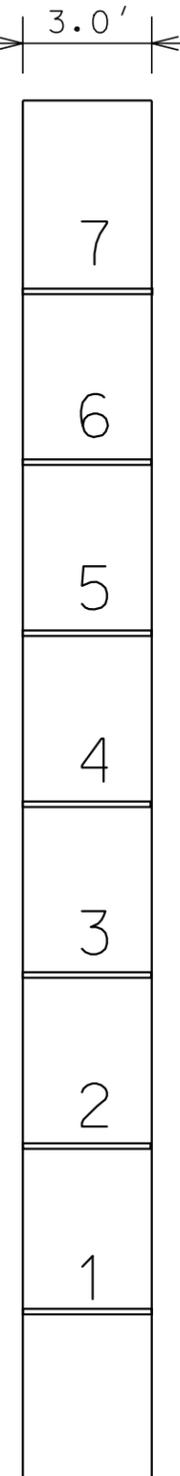
Concrete Shall be Class M-6.

Make 1" score in concrete for every one foot in vertical height.

Paint water height numbers at score marks. Numbers shall be 12" high. Paint for numbers shall be a coal tar epoxy paint.

All costs associated with the Water Depth Indicator, including disposal of in place indicator shall be incidental to the contract unit price per each for LAGOON DEPTH INDICATOR

Depth Indicator shall be located so as to be easily visible and as directed by the Engineer. Riprap shall be placed around Depth Indicator and shall not obstruct view of Depth Indicator.



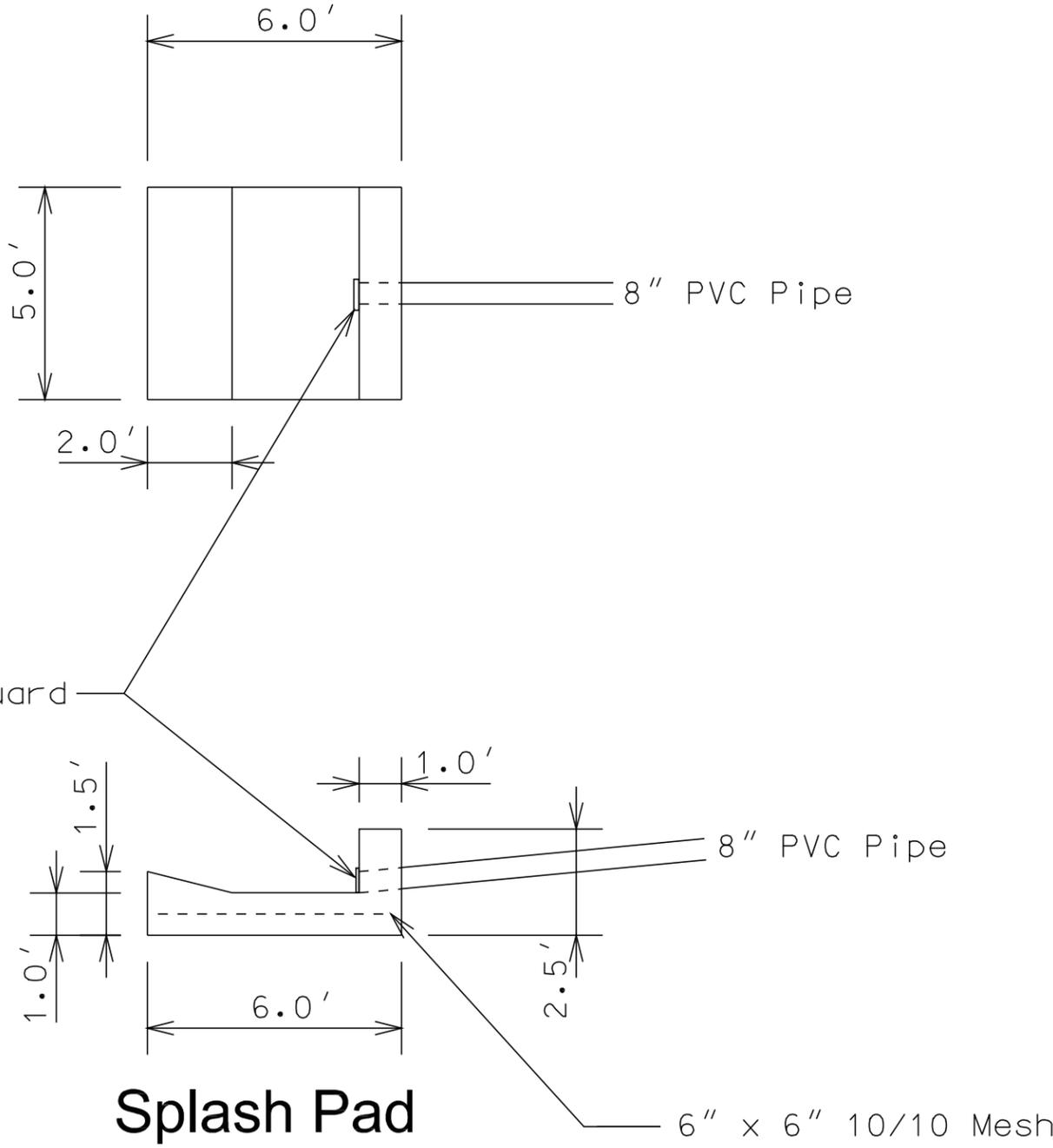
FILE - U:\REGIONAL\PRUNDEUL1258\DEPTH\_GUAGE.DGN PLOT NAME - DEPTH\_GUAGE

PLOT SCALE - 3.750000:1.000000

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# CONCRETE SPLASH PAD

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	029 S-171 & 029 N-171	10	12
Plotting Date: 17-MAY-2011			



## NOTES:

Concrete shall be Class M6.

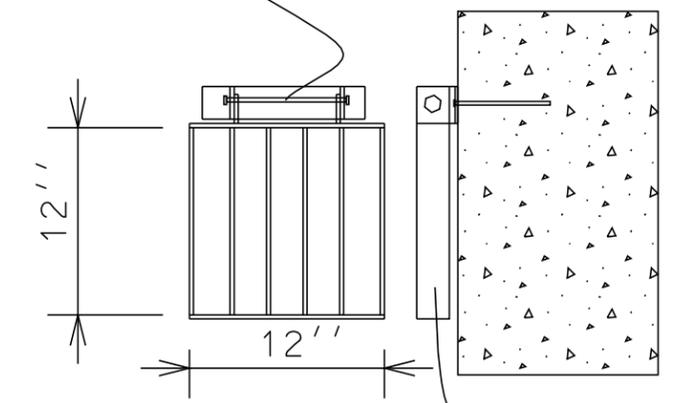
The rodent guard shall be made of 3/8" x 2" aluminum bar, attached with 1/4" fillet welds. All Bolts, nuts, and washers to be stainless steel. The rodent guard shall be centered about the hole in the headwall and fastened to the headwall with 1/2" anchor bolts. Round edges of aluminum bar to allow rodent guard the ability to be flipped upward.

Cast-in-place or drilled-in 1/2" anchors shall be placed in the headwall.

The linear integrity in the area around and beneath the concrete structure shall be maintained.

All costs associated with the Concrete Splash Pad including concrete, wire Mesh, and hinged rodent guard shall be incidental to the contract lump sum price for DRAINAGE SYSTEM.

1/2" Aluminum Bar for Hinged Rod

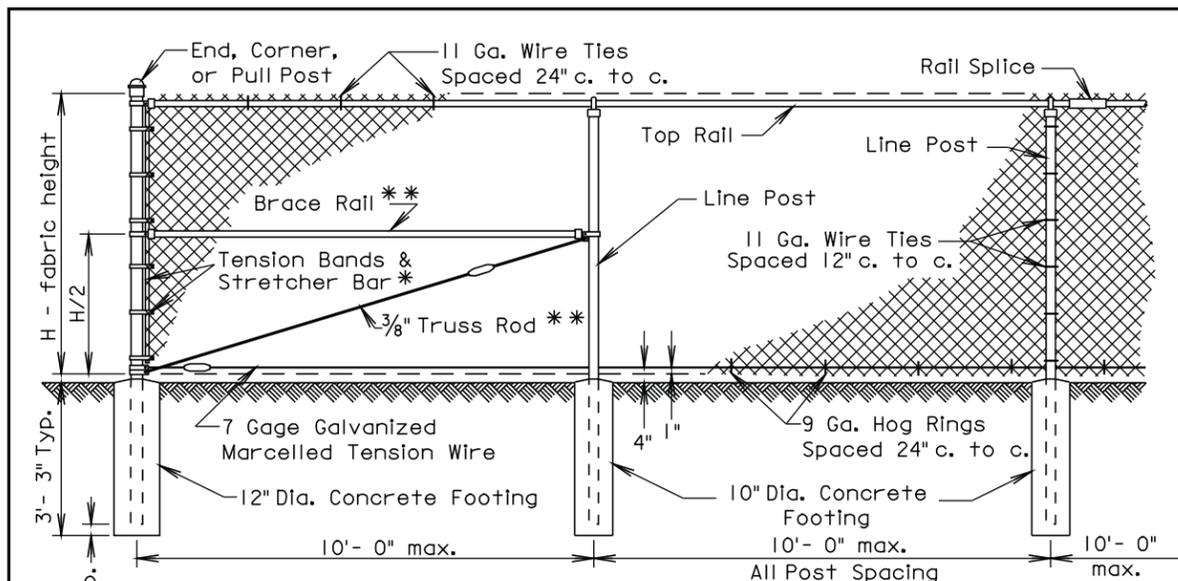


3/8" x 2" Aluminum Bar

## Hinged Rodent Guard

FILE - U:\REGIONAL\PRJ\DEUL1258\CONCRETE\_SPLASH\_PAD.DGN PLOT NAME - CONCRETE\_SPLASH\_PAD

Plotting Date: 17-MAY-2011



\* Tension Bands shall be spaced 12" c. to c.  
 \*\* Are not required for 3' thru 5' fences.  
 ○ Tightening Device such as shown on Plate No. 621.03

Component	End, Corner & Pull Post		Line Post			Top & Brace Rail	
	Round Pipe Nominal	Roll Formed Steel	Round Pipe Nominal	"C" Section	H-Beam Steel	Round Pipe Nominal	Roll Formed Steel
Size	3.00" O. D.	3.5" x 3.5"	2.50" O. D.	1.875"x1.625"	2.25"x1.70"	1.625" O. D.	1.625"x1.25"
Weight (lb. / ft.)	5.79 or 4.64	5.14	3.65 or 3.12	2.34	3.43	2.27 or 1.84	1.35

**GENERAL NOTES:**

Specific details of manufacture of component parts of the complete fence construction shall be subject to the approval of the Engineer. Commercially available items produced specifically for the use intended shall be used wherever possible in the construction of the fence.

"H" (Height of Fabric) shall be as shown on the Plans. Fabric is available in the the following heights; 36", 42", 48", 60", 72", 84", 96", 108", 120", & 144". Fabric heights 60 inches and under shall be knuckled at both selvages. Fabric heights 72 inches and over shall be knuckled at one selvage and twisted at the other selvage.

Chain Link Fabric shall be 2" mesh, No. 9 gage galvanized wire securely fastened to Tension Wire, Line Post, Rails, Braces and Stretcher Bars spaced as shown hereon.

Fence may be constructed with either Round Pipe, "C" Section, "H" Beam, or roll Formed Steel components as shown in the table above. Line post may be Round Pipe, "C" Section, or "H" Beam. The Corner Post and Rails shall be either Round Pipe or Roll Formed Steel. The type of components used shall have prior approval by the Engineer before construction.

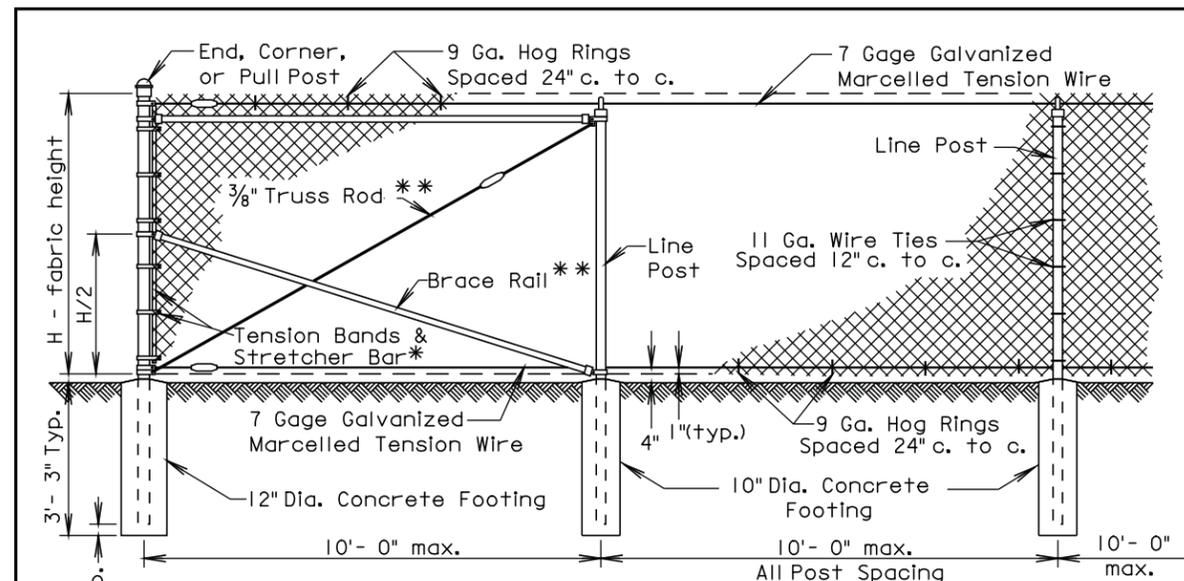
Where fence must cross small bodies of water (such as drainage areas or ponds) that could freeze during the winter, use 11 gage Hog Rings. Provide only two ties per Tension Wire and Top Rail between line posts.

A suitable method of rail splicing shall be used to allow for expansion and contraction while maintaining proper position of the Top Rail.

March 31, 2000

<b>S D D O T</b>	<b>CHAIN LINK FENCE WITH TOP RAIL</b>	PLATE NUMBER <b>621.01</b>
		Sheet 1 of 1

*Published Date: 2nd Qtr. 2011*



\* Tension Bands shall be spaced 12" c. to c.  
 \*\* Are not required for 3' thru 5' fences.  
 ○ Tightening Device such as shown on Plate No. 621.03

Component	End, Corner & Pull Post		Line Post			Top & Brace Rail	
	Round Pipe Nominal	Roll Formed Steel	Round Pipe Nominal	"C" Section	H-Beam Steel	Round Pipe Nominal	Roll Formed Steel
Size	3.00" O. D.	3.5" x 3.5"	2.50" O. D.	1.875"x1.625"	2.25"x1.70"	1.625" O. D.	1.625"x1.25"
Weight (lb. / ft.)	5.79 or 4.64	5.14	3.65 or 3.12	2.34	3.43	2.27 or 1.84	1.35

**GENERAL NOTES:**

Specific details of manufacture of component parts of the complete fence construction shall be subject to the approval of the Engineer. Commercially available items produced specifically for the use intended shall be used wherever possible in the construction of the fence.

"H" (Height of Fabric) shall be as shown on the Plans. Fabric is available in the the following heights; 36", 42", 48", 60", 72", 84", 96", 108", 120", & 144". Fabric heights 60 inches and under shall be knuckled at both selvages. Fabric heights 72 inches and over shall be knuckled at one selvage and twisted at the other selvage.

Chain Link Fabric shall be 2" mesh, No. 9 gage galvanized wire securely fastened to Tension Wire, Line Post, Rails, Braces and Stretcher Bars spaced as shown hereon.

Fence may be constructed with either Round Pipe, "C" Section, "H" Beam, or roll Formed Steel components as shown in the table above. Line post may be Round Pipe, "C" Section, or "H" Beam. The Corner Post and Rails shall be either Round Pipe or Roll Formed Steel. The type of components used shall have prior approval by the Engineer before construction.

All post shall have a means to securely hold the top tension wire in position and allow for the removal and replacement of a post without damaging the top tension wire.

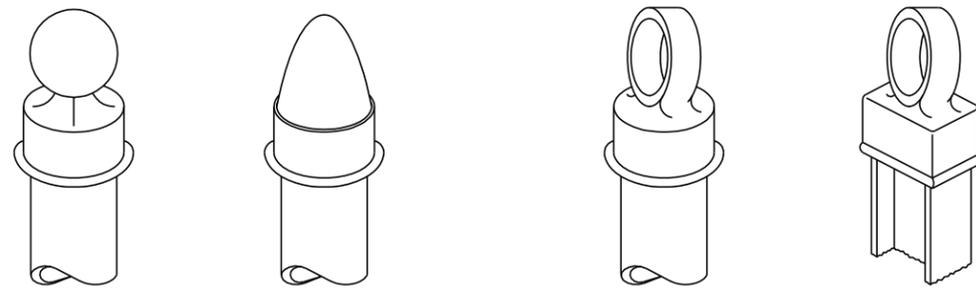
Where fence must cross small bodies of water (such as drainage areas or ponds) that could freeze during the winter, use 11 gage Hog Rings. Provide only two ties per Tension Wire and Top Rail between line posts.

March 31, 2000

<b>S D D O T</b>	<b>CHAIN LINK FENCE WITH TENSION WIRED TOP</b>	PLATE NUMBER <b>621.02</b>
		Sheet 1 of 1

*Published Date: 2nd Qtr. 2011*

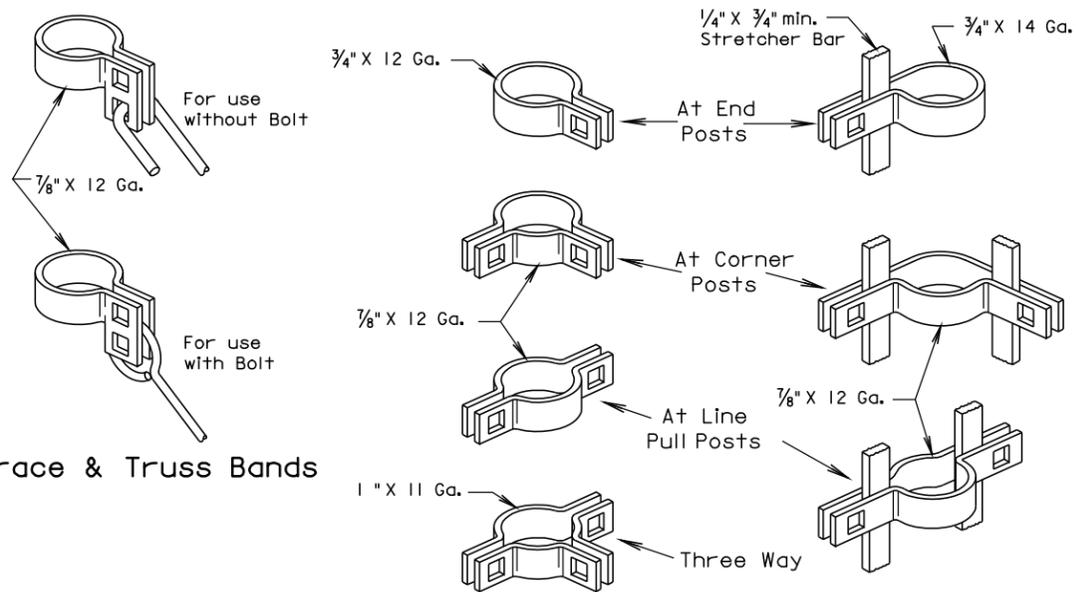
Plotting Date: 17-MAY-2011



For End, Corner and Pull Posts

For Line Posts

Typical Post Tops  
(Shown for example only)

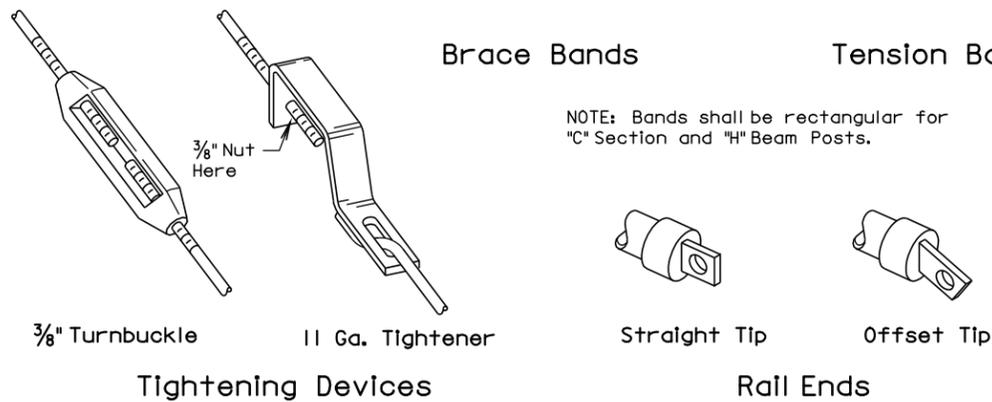


Brace & Truss Bands

Brace Bands

Tension Bands

NOTE: Bands shall be rectangular for "C" Section and "H" Beam Posts.



3/8" Turnbuckle

11 Ga. Tightener

Straight Tip

Offset Tip

Tightening Devices

Rail Ends

March 31, 2000

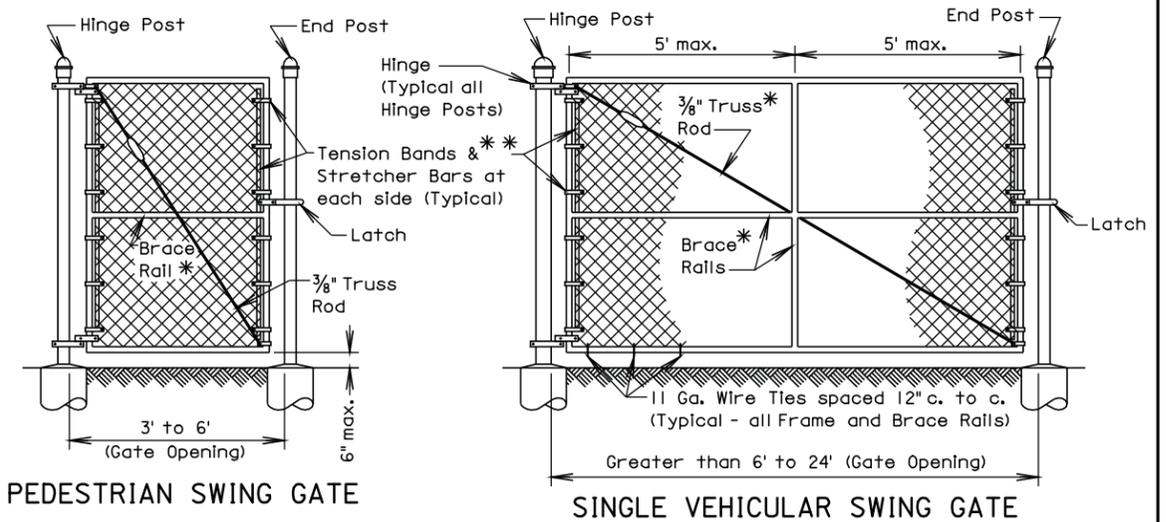
Published Date: 2nd Qtr. 2011

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HARDWARE FOR CHAIN LINK FENCE

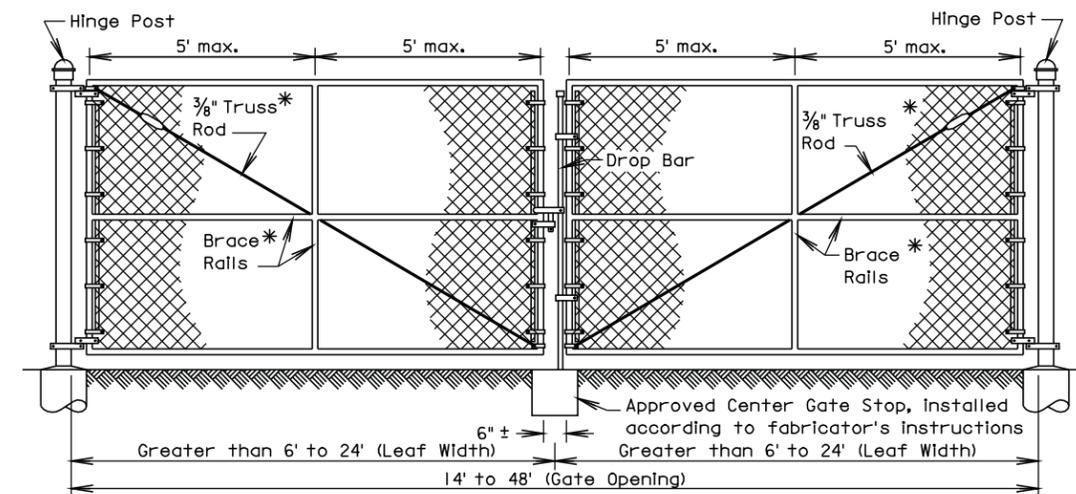
PLATE NUMBER  
621.03

Sheet 1 of 1



PEDESTRIAN SWING GATE

SINGLE VEHICULAR SWING GATE



DOUBLE VEHICULAR SWING GATE

Gate Opening		Frame Pipe Nominal	Brace Rail - Pipe Nominal
Width <sup>1</sup>	Height <sup>2</sup>		
3' to 8'	3' to 6'	1.50"	1.50"
>8' to 23'	6'	1.90"	1.50"
>8' to 23'	> 6' to 12'	1.90"	1.90"

Gate Opening Width <sup>1</sup>	Hinge Post		Concrete Footing	
	Round Pipe Nominal	Roll Formed Steel	Depth	Diameter
3' to 6'	3.00"	3.50"X3.50"	36"	12"
> 6' to 13'	4.00"	—	42"	12"
> 13' to 18'	6.625"	—	48"	18"
> 18' to 23'	8.625"	—	48"	24"

NOTE: Gate frames may be constructed of bent or welded steel tubing installed according to fabricator's instructions and subject to the Engineer's approval.

\* Are not required for gates 3' to 5' height or 5' or less in width.

\*\* Tension Bands shall be spaced 12" c. to c.

○ Tightening Device such as shown on standard plate 621.03

<sup>1</sup> Leaf width for Double Vehicular Swing Gate

<sup>2</sup> Shall coincide with fence height

September 14, 2001

Published Date: 2nd Qtr. 2011

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SWING GATES FOR CHAIN LINK FENCE

PLATE NUMBER  
621.10

Sheet 1 of 1